

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

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Date: June 6, 1977

Project Title: Educational Modules Development for the Nuclear Fuel Cycle

Project No: E-26-627

Project Director: Dr. A. Schneider

Sponsor: Kansas State University

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Agreement Period: From 1/1/77 Until ~~4/30/78~~ 30 Sep 79

Type Agreement: State Agency Contract No. 367-613 (Under ERDA, Savannah River Operations, Prime Contract No. E(38-1)-952)

Amount: \$25,000

Reports Required: Letter Status Reports; Final Letter Status

Sponsor Contact Person (s):

Technical Matters

Dr. N. Dean Eckhoff
Professor and Head
Department of Nuclear Engineering
Kansas State University
Manhattan, Kansas 66502
(913) 532-5624

Contractual Matters

(thru OCA)
Ralph H. Perry
Comptroller
Kansas State University
Manhattan, Kansas 66502

Defense Priority Rating: D0-E2 under DPS Reg. 1

Assigned to: Nuclear Engineering (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director-EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
Office of Computing Services
Director, Physical Plant
EES Information Office
Project File (OCA)
Project Code (GTRI)
Other _____

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEETDate 3/14/84Project No. E-26-627*School/Tab NE

Includes Subproject No.(s) _____

Project Director(s) Dr. A. Schneider~~GTRI~~ / GITSponsor Kansas State UniversityTitle Educational Modules Development for the Nuclear Fuel CycleEffective Completion Date: 9/30/79 (Performance) 9/30/79 (Reports)

Grant/Contract Closeout Actions Remaining:

*NOTE: This project number has been reused on
a more recent project.☒ None☐ Final Invoice or Final Fiscal Report☐ Closing Documents☐ Final Report of Inventions☐ Govt. Property Inventory & Related Certificate☐ Classified Material Certificate☐ Other _____

Continues Project No. _____

Continued by Project No. _____

COPIES TO:

Project Director
Research Administrative Network
Research Property Management
Accounting
Procurement/EES Supply Services
Research Security Services
Reports Coordinator (OCA)
Legal Services

Library
GTRI
Research Communications (2)
Project File
Other _____

SCHOOL OF NUCLEAR ENGINEERING

Atlanta, Georgia 30332

(404) 894-3720

June 29, 1977

E-26-627

Dr. N. Dean Eckhoff
Professor and Head
Department of Nuclear Engineering
Kansas State University
Manhattan, Kansas 66502

Reference: Kansas State Agency Contract No. 367-613
Georgia Institute of Technology Project No. E-26-627

Dear Dr. Eckhoff:

Work on our contribution to the "Educational Modules Development for the Nuclear Fuel Cycle" started at the beginning of this year. The following is a brief Status Report covering the period January 1 - June 30, 1977.

Task 1. The Design of Nuclear Fuel Cycle Facilities.

The objective of this task is the development of a complete educational module intended for nuclear engineering seniors or graduate students. The completed module will consist of the following sections:

- o Outline of the course
- o Copies of graphic lecture aids
- o Selected lecture notes
- o List of references
- o The design report.

During this Spring Quarter we taught for the first time, to a class of ten Nuclear Engineering seniors, a nuclear fuel cycle facilities design course. The course included:

Seven one-hour lectures covering the following topics:

General Design Considerations
Project Definition
Process
Equipment
Safety Aspects
Design Criteria
Cost Accounting and Project Economics
Site Selection
Detailed Engineering.

Ten formal presentations by students on the following topics:

Planning and Scheduling of Projects
ORIGEN - a Program for the Prediction of Spent Fuel Inventories

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Dr. N. Dean Eckhoff
June 29, 1977

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A Review of High-Level Waste Solidification Processes
The Layout of Remotely Operated Plants
Utilities (Steam, Water, Power) for Radiochemical Plants
Equipment for Waste Solidification
Materials of Construction
Cash Flow During a Large Construction Project
Instruments and Process Control in a Radiochemical Plant
Licensing of a Large Radiochemical Plant.

The class project:

"Preliminary Design and Analysis of a High-Level Liquid Waste Solidification Facility."

A Design Report incorporating the individual contributions was submitted by the Project Team. The recommendations of the Team were defended during a presentation.

Work now in progress includes the editing of the Design Report for inclusion in the Educational Module. Explanatory material is being added in the area of flowsheet development, computer codes use, equipment sizing, shielding, and accident analysis.

Material used during the formal lectures is being assembled and edited for inclusion in the module.

Task 2. Collaboration with Dr. K. Garlid, University of Washington, on the module "Fuel Reprocessing."

No work was done on this task during this period.

I attended the ANS topical meeting on "The Plutonium Fuel Cycle" held in Bal Harbour, Florida, May 2-4, 1977. Of interest to the development of modules in which I am involved were sessions on reprocessing and design of mixed oxide fuel fabrication facilities.

We believe that our work is on schedule and the completed module will be available as stipulated in our contract.

Sincerely yours,

A. Schneider
Professor of Nuclear Engineering

AS:rs

Atlanta, Georgia 30332

(404) 894-3720

October 31, 1977

Dr. N. Dean Eckhoff
Professor and Head
Department of Nuclear Engineering
Kansas State University
Manhattan, Kansas 66502

Reference: Kansas State Agency Contract No. 367-613
Georgia Institute of Technology Project No. E-26-627

Dear Dr. Eckhoff:

Work on our contribution to the "Educational Modules Development for the Nuclear Fuel Cycle" started at the beginning of this year has continued. The following is a brief Status Report covering the period July 1 - September 30, 1977.

Task 1. The Design of Nuclear Fuel Cycle Facilities.

The objective of this task is the development of a complete module intended for nuclear engineering seniors or graduate students. The contents of the module, the topics of the lectures, and the titles of student presentations were given in the previous Status Report.

During this period, we concentrated on the editing of the student class project report, "Preliminary Design and Analysis of a High-Level Liquid Waste Solidification Facility." Explanatory material has been added and calculations are being checked.

The major sections of this report are:

- o Introduction
 - o Design Basis
 - o Feed Composition
 - o Flow Sheet
 - o Process Equipment
 - o Site
 - o Detailed Engineering
 - o Safety
 - o Licensing
 - o Economics
 - o Appendices
- Review of High-Level Liquid Waste Solidification Processes
Borosilicate Glass Characteristics

Dr. N. Dean Eckhoff
October 31, 1977

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ORIGEN - A program for the Prediction of Spent Fuel Inventories
Shielding Calculations
References.

- The editing of material used in the formal lectures is continuing.

Task 2. Collaboration with Dr. K. Garlid, University of Washington, on the module "Fuel Reprocessing."

No work was done on this task during this period.

We believe that our work is on schedule and the completed module will be available as stipulated in our contract.

Sincerely yours,

A. Schneider
Professor of Nuclear Engineering

AS:rs